Sub A2

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

Sub A3

1. A motor control circuit for a direct current electric motor having a pair of direct current inputs supplied respectively from negative and positive current sources wherein said motor is actuated to turn a shaft in one of two directions dependant on which polarity of current is being provided to said motor, said motor control circuit comprising,

a pair of unipolar control circuits wherein a respective one of each unipolar control circuits is connected between a respective current source and a current input to said motor wherein a respective unipolar control circuit which is adapted to operate said motor in one of said two directions.

2. A motor control circuit according to claim 1 wherein each of said unipolar control circuits are substantially identical.

3. A motor control circuit according to claim 1 wherein each of said unipolar control circuits further comprises

a solid state switch located between a said motor current input and said source of direct current wherein the degree to which said solid state switch allows current to flow to said motor is controlled by an input bias signal to said switch,

current limiting means for adjusting said input bias signal according to the current flowing through said motor, such that said switching means adjusts said input bias to said solid state switch such that less current flows through said motor when a predetermined period of current limiting has occurred.

4. A motor control circuit according to claim 3 wherein said current limiting means further comprises a temperature compensation circuit.

5. A motor control circuit according to claim 4 wherein said temperature compensation circuit comprises a thermistor having a negative temperature co-efficient located in said circuit so that as the ambient temperature and control circuit temperature rises the current through the thermistor increases and said input bias signal to said solid state switch is compensated.

6. A motor control circuit according to claim 3 wherein said switch means is arranged to not operate said motor when said current limiting is occurring for a further predetermined period of time.

7. A motor control circuit according to claim 3 wherein said switch means is arranged to not operate said motor when current drawn by said motor exceeds a predetermined threshold current for a predetermined period of time.

8. A motor control circuit according to claim 3 wherein said current limiting means comprises

a motor current sensing circuit comprising a shunt resistor arranged to carry a proportion of the current flowing through said motor and provide a respective voltage to the base of a bipolar transistor which is arranged to turn on at a predetermined voltage level representative of the current flowing through said motor at which it should be switched off, such that said bipolar transistor turns on when said predetermined voltage level is reached and which decreases the input bias to said solid state switch to lessen the current through said motor.

9. A motor control circuit according to claim 1 wherein each of the other of said pair of unipolar control circuits conducts current to complete the circuit to allow said motor to operate.

10. A motor control circuit according to claim 1 wherein each of said unipolar control circuits further comprises

a solid state switch located between a said motor current input and said source of direct current wherein the degree to which said solid state switch allows current to flow to said motor is controlled by an input bias signal to said switch,

current detection means to detect the magnitude of current being drawn through said motor and if said magnitude exceeds a predetermined level for a predetermined time reduce said input bias signal to said switch.

11. A motor control circuit according to claim 1 wherein current is primarily conducted through said motor.